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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,254	12/27/2004	Nobuhito Miyashita	043150	2866

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EXAMINER

TRIEU, THERESA

ART UNIT	PAPER NUMBER
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3748

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/519,254	Applicant(s) MIYASHITA ET AL.	
	Examiner Theresa Trieu	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Dec. 27, 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>Dec. 27, 2004</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

1. Figure 9 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: "the pair of facing teeth surfaces being contact at each other only at a pitch line" as recited in claim 1.

Claim Objections

3. Claims 1-8 are objected to, in that their subject matter needs to be incorporated into the specification and the drawings.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite and functional because insufficient structure or structural relationships are recited to support the statements a pair of facing teeth surfaces of said screw rotors *to be brought into contact with each other only at a pitch line* when said pair of facing teeth surfaces are brought into contact with each other. In other words, it's unclear on which side (leading or trailing surface) of the rotors 2a, 2b having a contact surfaces *only at a pitch line* and on which side (leading or trailing surface) of the rotors 2a, 2b having a clearance (see Fig. 1).

Claims 2-8 are rejected by virtue of their dependence on claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (Kawamura) (Patent Number 5,697,772) in view of British Thomson Houston (BTH) (Publication Number GB 419, 338).

Regarding claims 1-4 and 8, Kawamura discloses a screw pump, comprising: a pair of screw rotors having teeth which are held in mesh with each other for drawing and discharging a fluid by rotating the screw rotors synchronously in opposite directions, the teeth of the screw rotors 5A, 5B having the same shape as each other and being coiled helically in opposite directions; wherein the teeth of the screw rotors have an axial tooth profile including a trochoid curve which allows a pair of facing teeth surfaces of the screw rotors to be brought into contact with each other at a pitch line when the pair of facing teeth surfaces are brought into contact with each other (see Figs. 1-13); the axial tooth profile comprising an outer circumferential section AB, a tooth root section CD, and two interconnecting sections for interconnecting the outer circumferential section AD, BC and the tooth root section, the outer circumferential section and the tooth root section are located apart from the pitch line by a substantially equal distance, respectively, and one of the two interconnecting sections comprises an inclined-line which inclines with respect to a direction perpendicular to an axial direction of the screw rotor in such a manner that a tooth width of the screw rotor becomes smaller from the tooth root section toward the outer circumferential section; a gradient of the inclined-line in a region from the pitch line

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(see Figs. 4, 7-12) to the outer circumferential section is larger than a gradient of the inclined-line in a region from the tooth root section to the pitch line; the teeth of the screw rotors have a transverse tooth profile including a trochoid curve generated by a point on an outer circumferential surface of the screw rotor at companion side, or a curve similar to the trochoid curve, and the other of the two interconnecting sections corresponds to the trochoid curve or the curve similar to the trochoid curve. However, Kawamura fails to disclose the pair of facing teeth surfaces being contact at each other only at a pitch line.

BTH teaches that it is conventional in the art to utilize the pair of facing teeth surfaces being contact at each other only at a pitch line (see Figs. 5 and 6). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the pair of facing teeth surfaces being contact at each other only at a pitch line, as taught by BTH in the Kawamura apparatus, since the use thereof would have improved the performance the efficiency of the pump device.

6. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura in view of BTH as applied to claim 1 above, and further in view Yanagisawa et al. (Yanagisawa) (Publication Number JP 09-324780).

The modified Kawamura device discloses the invention as recited above; however, the modified Kawamura fails to disclose a pair of magnet rotors.

Yanagisawa teaches that it is conventional in the art to utilize a pair of rotating shafts 2a, 2b to which the screw rotors 28a, 28b, 29a, 29b are fixed; and a pair of magnet rotors attached to the rotating shafts; wherein the magnet rotors 20a, 20b have the same number of magnetic poles as each other, and the magnet rotors are arranged such that unlike magnetic poles of the

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respective magnet rotors attract each other (see Fig. 2); plural-phase armatures having cores 21a-26b and windings and being disposed radially outwardly of at least one of the magnet rotors 20a, 20b; wherein at least one of the magnet rotors is driven by switching currents flowing to the armatures so that the screw rotors are rotated synchronously in the opposite directions. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the pair of magnet rotors, as taught by Yanagisawa in the modified Kawamura apparatus, since the use thereof would have prevented the screw pump from being overloaded.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura in view of BTH as applied to claim 1 above, and further in view Yanagisawa.

The modified Kawamura device discloses the invention as recited above; however, the modified Kawamura fails to disclose a plural pairs of magnet rotors. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the plural pairs of magnet rotors, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co., Inc.*, 193 USPQ 8 (7th Cir. 1977).

Prior Art

The IDS (PTO-1449) filed on Dec. 27, 2004 has been considered. An initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of two patents: Oldberg (U.S. Patent Number 2,530,173) and Iyoi (U.S. Patent Number 3,164,099), each further discloses a state of the art.

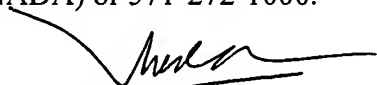
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa Trieu whose telephone number is 571-272-4868. The examiner can normally be reached on Monday-Friday 8:30am- 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on 571-272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT
April 12, 2007



Theresa Trieu
Primary Examiner
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